

Syllabus v. 09-25-09
Marine Molecular Biology, BI 457/557 Fall 2009

Instructor: Svetlana Maslakova (svetlana@uoregon.edu)

Teaching Assistant: Erin Cooper (ecooper@uoregon.edu)

Class hours:

8:30 am - 5:00 pm Thursday

8:00 am - 9:00 pm Friday

Note: During second week of classes, we will meet at 8:00 am on Tuesday (Oct. 6) and at 8:00 am Friday (Oct. 9). During the third week of class we have a 2 hour field trip 5-7 pm on Thursday (Oct. 15) to catch a low tide.

The purpose of this course is to provide hands-on experience with basic universally applicable molecular techniques in a context of group research project(s) focused on local marine organisms. Students will generate novel sequence data and learn to analyze it using research databases (such as NCBI Genbank) and a variety of sequence and phylogenetic analysis software (e.g. Codon Code Aligner, ClustalX, PAUP, Treeview). We will likely have several field trips to collect material for the course, but most of our time will be spent in laboratory exercises, tutorials and lectures. Lab work will include DNA extractions (from animal tissue and individual planktonic larvae), gel electrophoresis, PCR, and sequence analysis. Each Friday we will meet for one hour to discuss recent publications which describe the use of molecular methods in taxonomy, systematics, dispersal and conservation biology of marine organisms. Each student will maintain a detailed laboratory notebook (a kind of log) in which to keep track of samples, laboratory procedures, deviations from standard protocols, errors, and results. This log will help you troubleshoot research projects and serve as a valuable record of your work. At the end everyone will participate in writing a final paper to summarize the results of research project(s).

Pre-requisites:

Basic understanding of cell and molecular biology. No prior laboratory experience is required

Textbooks:

No textbook required. Reading will be assigned on the weekly basis (see detailed schedule).

Assessment and Grading:

Homework assignments 30%

Lab notebook 20%

Participation in class and research project 10%

Participation in discussions 10%

Final paper (group graded) 10%

Midterm exam 10%

Final exam 10%

Examples of past research projects (Fall 2008):

1. Genetic identification of marine invertebrate larvae from the central Oregon coast.
2. Intraspecific variation of mitochondrial gene sequences (COI and 16S) in two Pacific coast populations of a ribbon worm *Micrura alaskensis* (Phylum Nemertea) with a long-lived planktonic larva.
3. Intraspecific variation of mitochondrial gene sequences (COI and 16S) in two Pacific coast populations of a ribbon worm *Paranemertes peregrina* (Phylum Nemertea) with a short-lived planktonic larva.
4. Intraspecific variation of mitochondrial gene sequences (COI and 16S) in two Oregon coast populations of marine gastropod *Tegula funebris* (Phylum Mollusca) – assessing patterns of dispersal.